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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Vol. XX May 1, 1936 Number 8

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AN EPIPHYTOTIC OF BEAN RUST IN FLORIDA

C. R. Townsend and W. B. Tisdale

Bean (Phaseolus vulgaris L.) rust caused by Uromyces phaseoli typica Arth. has been a serious disease on the late summer and fall crops of Kentucky Wonder beans in the northern part of the State since 1923, when this variety was first grown extensively in that area. In the southern portion of the State bush beans, principally the Bountiful variety, are grown extensively and mostly during the fall and winter months. Rust occurs in most localities of this portion of the State every year but, as a rule, causes no damage and often is never observed by the growers. Such slight infections had been considered to be due in part to the fact that the Bountiful has been considered to be only slightly susceptible to rust. However, this theory was proved erroneous during the 1935-36 season.

Rust was first observed in November of this season in the east coast section between West Palm Beach and Fort Lauderdale and became more severe on successive plantings until early in March. Losses from the disease in that section have been uniformly heavy and in many cases the crop was a total failure. Several thousand acres were not picked at all and the yield on most of the remaining acreage was low, averaging about 25 percent of a normal yield for the season. Rust did not appear on beans in the Everglades area around Lake Okeechobee until early in March and then did not become very prevalent. Consequently, the loss in that section of the State was of minor importance.

Many growers dusted with sulphur or 20-80 copper lime dust, beginning when the plants were young and before rust appeared on them, in an effort to control the disease. The dusts were applied at night with power dusters when conditions for dusting were said to be ideal. In these tests as much as 90 pounds of sulphur per acre in four applications and 72 pounds of the copper-lime dust per acre in six applications were used. Neither of these treatments had any appreciable effect in retarding the disease, as the growers who used them estimated their loss at 80 percent for the season.

Certain growers who planted small acreages of Black Valentine varieties of wax beans reported that they were more resistant to rust than the Bountiful. In several cases it was observed that the Bountifuls were killed, whereas the Wax and Black Valentines planted in adjacent rows produced a good crop. At present, however, there appears to be a limited demand for these varieties.

Weather conditions prevailing this winter in the east coast section have apparently been very favorable for the development of bean rust and unfavorable for beans. Although there were no extremely low temperatures for that section, the daily mean temperatures throughout the winter were unusually low and in the range considered favorable for rust. Also, rains

were frequent and fogs and dews were more prevalent than during more normal years. Since a small amount of rust may be observed every year, it appears that the epiphytotic this year developed as a result of abnormal weather conditions which were favorable for rust infection during a greater part of the growing season. This theory is supported by the fact that the last plantings made after the middle of March when the temperatures were higher and rains less frequent have remained practically free of rust. (Florida Agricultural Experiment Station).

PINK ROT OF CELERY IN FLORIDA

W. B. Tisdale and David G. A. Kelbert

Pink rot (Sclerotinia sclerotiorum (Lib.) DBy.) of celery occurs to some extent every year in the Sarasota and Sanford areas but usually causes comparatively little loss. Because of this no particular effort is made to control it aside from the spraying done for the control of early and late blights. The celery refuse is rarely or never removed from the fields and often is allowed to remain on the surface, sometimes in piles, for several days or weeks before it is plowed under. It has been reported that a few growers make it a practice to turn under the refuse deeply. Although the disease is reported to have been less severe this year in fields treated in this manner, it is apparent that the fungus will not be eradicated from the soil, especially when the sclerotia are permitted to develop in abundance before the refuse is turned under and the land is planted to celery every year.

The midseason planting in the Sarasota area suffered heaviest loss from pink rot this season, while the loss in earlier plantings was not considered unusual. This planting involved about 300 acres and the reduction in yield was estimated at from 50 to 80 percent. The product that was shipped from these fields developed more or less pink rot in transit, depending upon the length of time the cars were in transit. Returns on the carlot shipments were not available for inspection, but it was reported that the loss in many cases ranged from 50 percent upward and that in some instances the amount received was insufficient to pay the freight.

This acreage was set in the field during the first week in December and was injured by cold during the latter part of that month. Certain growers removed the injured leaves soon after the freeze and it was reported that fields so treated developed less pink rot than the ones from which the injured leaves were not removed. This planting also suffered more from the continued cold rainy weather than the other plantings. Most of the acreage was flooded at times during the heavy rains of February and was apparently exposed to unfavorable growing conditions for a greater part of the season.

The losses incurred in the later plantings were less extensive and have shown a continued decrease from February until April 18. During this period weather conditions have moderated considerably. It thus appears that the epiphytotic of pink rot of celery has occurred as a result of environmental conditions that were unfavorable for celery and more favorable for the fungus.

Pink rot was more prevalent in the midseason plantings in the Sanford area than usual, but except in few instances no great amount of damage was reported. The crop in this area, however, was not as severely injured by cold and heavy rains as that in the Sarasota area, which may have been partially responsible for the difference in degree of infection in the two areas. (Florida Agricultural Experiment Station).

NOTES ON VEGETABLE AND TOBACCO DISEASES IN NORTH CAROLINA

Luther Shaw

Poor stands of Irish potatoes as a result of poor seed stock and adverse weather conditions: An extremely poor stand of Irish potatoes has been obtained in Eastern North Carolina to date. A large number of fields were observed in Pamlico, Beaufort, Martin, and Lenoir Counties on April 15, 16, and 17. More than 50 percent of the fields observed had less than 50 percent of a normal stand while stands in the other fields ranged from 50 to 85 percent of normal. Only one field was observed with a complete stand of plants. In a number of fields seed pieces were dug from the soil and examined. Only a very small percentage (less than 2 percent)of the seed pieces had decayed. The sprouts on approximately 50 percent of the seed pieces that were dug up had begun to grow but the mechanical resistance of the packed soil was delaying their appearance. The sprouts on the remaining 50 percent appeared to have grown but little, if any, since the seed pieces were planted. It does not appear as though adverse weather has been the primary cause of the poor, irregular stands, because if it had, it is probable that the delay in appearance of the plants would have been more general and uniform. The fact that some of the seed pieces germinated and came up immediately after planting, and others did not, seems to indicate that some of the potatoes were still in a dormant condition when placed in the soil. It is probable that many of these seed pieces will produce plants; however, only a small percentage of the plants can be expected to produce marketable tubers.

Downy mildew on Crucifers: A general epiphytotic of downy mildew, caused by Peronospora parasitica (Pers.) DBy., has occurred on cabbages and collards in the plant beds of eastern North Carolina. Very few plants have died from the attack of the parasite, but serious defoliation has occurred in a high percentage of the beds. As a result, the plants are stunted.

Damping-off of Tobacco, Tomato, and Pepper Plants: Damping-off has caused considerable damage to tobacco, pepper, and tomato plants in North Carolina during the current season. The cool, rainy weather during late March and early April was unusually favorable for the development of this disease. Damping-off combined with drown has caused considerably more damage to tobacco plant beds to date than has mildew. It was estimated that 10 percent of the plants on 78 beds examined during the week of April 13 to 18, were either damaged by damping-off or excess water or both. Approximately two-thirds of the damage was directly due to excess water and one-third to damping-off. As a result of this damage the stands were uneven and the plants were irregular in size. A number of pepper and tomato beds were observed in which damping-off had killed from 5 to 20 percent of the plants. The clear, warm weather which has prevailed since April 10, apparently has checked the development of damping-off. (Extension Pathologist, North Carolina Agricultural Experiment Station).

PROMINENT APPEARANCE OF DOWNY MILDEW (BLUE MOLD) ON TOBACCO IN NORTH CAROLINA

Luther Shaw

Mildew (Peronospora tabacina Adam) was first reported on tobacco plant beds in eastern North Carolina about April 1. The disease has developed rapidly in the South Carolina and eastern North Carolina Tobacco Belts since that date. This period was characterized by cool, moist weather which is apparently ideal for growth and spread of the causal agent. A plant-bed survey was made in eight counties in the eastern North Carolina Tobacco Belt during the week of April 13 to 18. Examination was made of a total of 78 beds. Thirty-seven were on sites where plants were grown in 1935. The remaining 41 were on new sites. Mildew was found on 19 of the beds on old sites. In five of the beds approximately 50 percent of the plants were killed; in 11, from 10 to 25 percent were killed; and in 3 the disease had just started and the damage was less than 1 percent. The remaining 18 beds on old sites and the 41 beds on new sites were entirely free from macroscopic symptoms of the disease. Six cases were observed in which mildew was present on beds on old sites, but had not yet appeared on immediately adjacent beds on new sites. The disease is now present in the eastern portion of the Middle Belt, but it apparently has not yet appeared in the Old Belt. (Extension Pathologist, North Carolina Agricultural Experiment Station).

WINTER INJURY TO FRUIT TREES IN KENTUCKY

W. D. Valleau

According to Mr. W. W. Magill, the fruit and leaf buds of peaches are killed in the Louisville, Lexington, and eastern mountain district of Kentucky where temperatures from 17° to 22° below zero were recorded. Blossom buds lived thru in Pike County and counties along the Tennessee border and at Henderson, Owensboro, and Paducah, where the temperatures recorded were from 10° to 13° below. Elberta trees at Lexington are pushing out an occasional adventitious bud, and are dropping all leaf and flower buds from last year's twigs. The wood thruout the entire tree (Elberta) is brown and the bark is extensively browned thruout the trees but will have enough life so that the trees can recover. This is the most extensive damage that I have seen to peach trees in the past 17 years. The few remaining blossom buds have probably been destroyed all over the State.

Our apple trees did not appear to be extensively injured. There is a great difference in blossoming, some of the varieties producing no blossom buds whatever, while others have a full bloom. This suggests that blossom buds on certain varieties were killed during the severe freezes in January, altho there is no proof of this. The recent cold spell caused considerable injury to apple blossoms. According to Magill, about 80 percent of the Delicious buds were injured in the Henderson section with a small amount of injury to some other varieties. In the Bluegrass section where apples were not so far advanced, there was less injury. (Kentucky Agricultural Experiment Station, April 16).

FURTHER REPORTS ON APPLE SCAB (VENTURIA INAEQUALIS)

NEW YORK: Hudson Valley--Samples now show that practically all visible or macroscopic perithecia contain mature spores. Leaves from badly scabbed blocks have 75 percent or more of the perithecia with roughly 50 to 100 percent mature spores. These leaves gave heavy spore shoots when tested in a petri dish. Perithecia are evident in greater numbers this season than they have been any year since 1930. Scab development is roughly 2 weeks ahead of any year during the same period and 3 to 4 weeks ahead of last year. Samples do not show that any appreciable discharge has yet taken place in the field, but a heavy discharge is forecasted for the next rain if the leaves get dry and they probably will with the wind of the last two days. (J. M. Hamilton, Apr. 17).

Western New York--No samples were received from the Lake Ontario Fruit belt this week. The previous samples indicated a development ahead of the average year, but behind 1935 except for the lake shore which was unusually retarded.

McIntosh leaves from the college orchard, April 18, show a considerable advance with most of the ascospores colored in 78 percent of the perithecia. Trap slides and crushed perithecia both indicate a very light ascospore discharge in the drizzle of April 18. These counts indicate that at Ithaca an unusually high percentage of the perithecia are filled with colored ascospores before much discharge has occurred. (W. D. Mills, Apr. 18).

KENTUCKY: Ascospores of the apple scab fungus matured at about the pink stage of bloom. (W. D. Valleau, Apr. 16).

PHONY PEACH DISEASE UNDER CONTROL

(From News Letter of the Bureau of Entomology and Plant Quarantine for January 1936, Vol. 3, No. 3, p. 18. Mar. 1936).

A marked degree of control of the phony peach disease has been obtained as a result of the campaign of the past 6 years, which has been carried on cooperatively with the State officers. Peach growing in the area of severe infection is regaining its former place as the principal money crop of the area, according to William F. Turner, Bureau field leader of the project, in a paper recently delivered before a division of the Southern Agricultural Workers Convention at Jackson, Mississippi. "Aside from the definite results in economic control that have been achieved," Mr. Turner stated, "the work done has greatly decreased the probability of dissemination of the disease by means of infected nursery stock, principally through protection of such stock from possible infection." Owing to the slowness of the natural spread of the disease the first objective of the campaign is to stop any possible spread of the disease by artificial means. If this factor can be eliminated it is believed that complete eradication of the disease may be feasible in sections where it is just becoming established, and may not be out of the question in any area where it may occur, regardless of its prevalence.

OVERWINTERING OF STEM RUST

(From News Letter of the Bureau of Entomology and Plant Quarantine for February 1936, Vol. 3, No. 4, p. 7. Apr. 1936).

During the period January 5 to 8, E. C. Stakman, in charge of rust surveys, assisted by Wallace Butler, made observations concerning the overwintering of stem rust (Puccinia graminis) in Oklahoma, Texas, and Illinois. Mr. Stakman reports as follows: "No stem rust was found in the vicinity of Tulsa, Oklahoma, on either wheat or oats, although leaf rust was fairly abundant on both. Near Purcell, Oklahoma, some

stem rust was found on oats, and in a field south of Fort Worth oat-stem rust was observed." According to Mr. Stakman, the conditions for overwintering of stem rust in northern Texas have been much less favorable this year than last. In February there were 14 days of alternate freezing and thawing on 4 of which the temperature remained below freezing throughout the 24 hours. No stem rust was found in Illinois.

NOTES ON WHITE PINE BLISTER RUST

(The following reports are quoted from the News Letter of the Bureau of Entomology and Plant Quarantine, for January, 1936, Vol. 3, No. 3, page 10. Mar. 1936).

New blister rust infection areas located in New York.--District leader Nichols of Essex County, New York, reports that during the early part of January several badly infected white pine areas were discovered by W. P. A. employees engaged in preeradication-survey work. These infection areas are located on the slopes of Jug, Little Far, and Old Far Mountains in North Hudson Township. Heavy infection and severe damage was noted on pines of all sizes, including many large trees.

Blister rust control activities in the North Central States.--A blister rust canker on white pine was found in Benzie County, Michigan, the first finding of blister rust on white pine in that county.

Pine infections in the Inland Empire.--The number of known locations of centers of pine infection in the Inland Empire as of December 1935 totaled 208, an increase of 79 over the number known at the end of 1934. Of this total, 15 are centers that originated in 1923. No new centers of this age were found in 1935.

SPECIMENS OF STIGMINA PLATANI WANTED

Mr. C. O. Smith of the Department of Plant Pathology, Citrus Experiment Station, Riverside, California, would like to have material of Stigmina platani (Fuck.) Sacc. (Stigmella platani Fuck.). He desires specimens from different localities and especially from Platanus occidentalis and P. orientalis. The material should be freshly collected, pressed as for the herbarium for twenty-four hours and then mailed at once to C. O. Smith, at the address given.

ILLUSTRATIONS FOR THE REPORTER

The Survey has been receiving, and is glad to have, an increasing number of informative maps, graphs, etc., for reproduction in the Reporter. A few suggestions as to their preparation may not be out of place.

We are limited to two methods of reproduction, mimeographing and rotoprinting. In the former, which is preferred because it is cheaper and because it is generally more satisfactory, the outline is traced directly on a stencil placed over the original. It will easily be seen that figures for reproduction by mimeographing should be simple, and should not be larger than 6 1/2 by 8 1/2 inches.

Rotoprinting can be used only sparingly because of the cost. It is a photographic method of reproduction permitting reduction or enlargement, and is used for the more complicated maps, drawings, etc. Everything that is to show on the finished print must stand out clearly in black and white on the original, and all lettering, symbols, etc., should be large enough to be clear when reduction is necessary.

This method is also suitable for limited use for reproducing photographs with sharp contrast and clear detail. Attempts to reproduce the general run of photographic illustrations on the grades of paper available to the Reporter are usually disappointing.

Illustrations suitable for reproduction are welcome. If necessary they can be worked over to the appropriate size and form for mimeographing but if they can conveniently be prepared originally to fit the Reporter page the cooperation will be a real help.